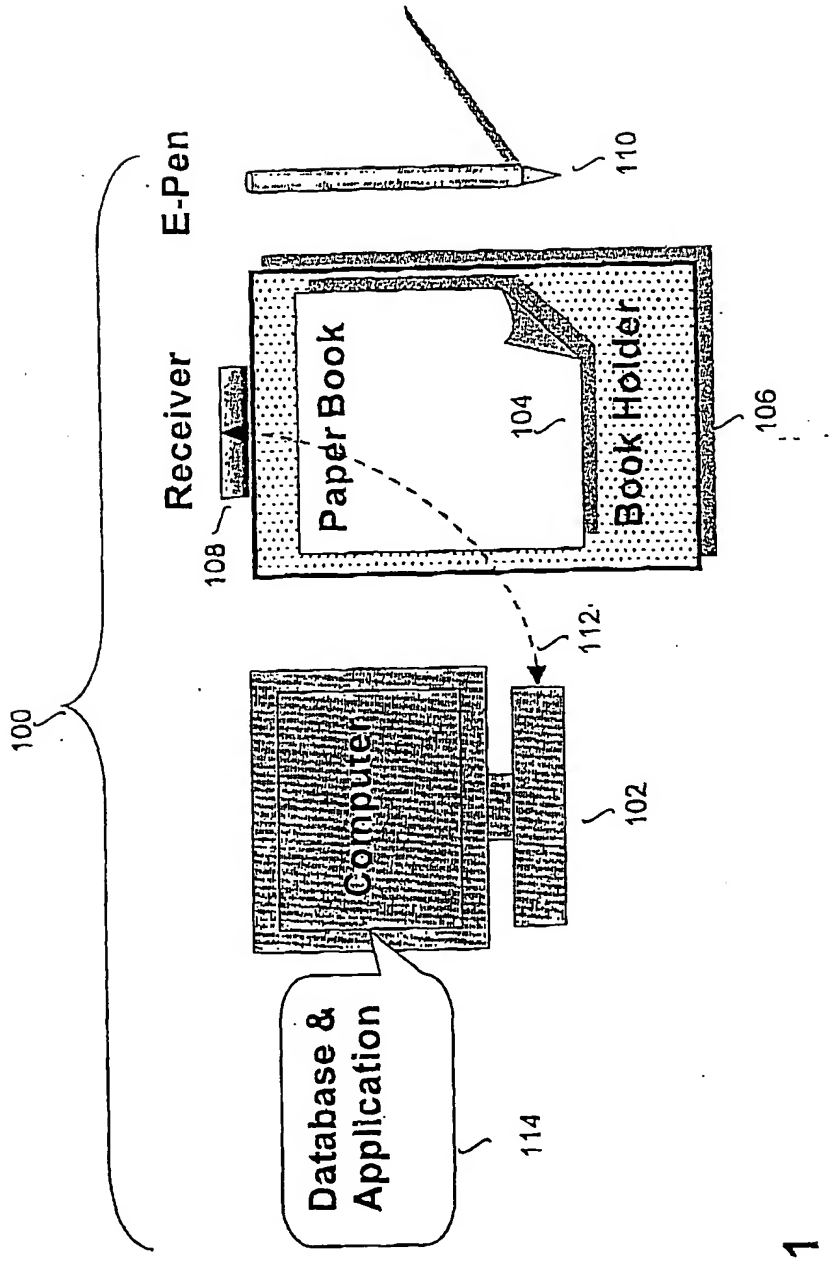
E-Pen
110
Receiver
108
Paper Book
104
Book Holder
106
112
100
Computer
102
Database &
Application
114

Figure 1

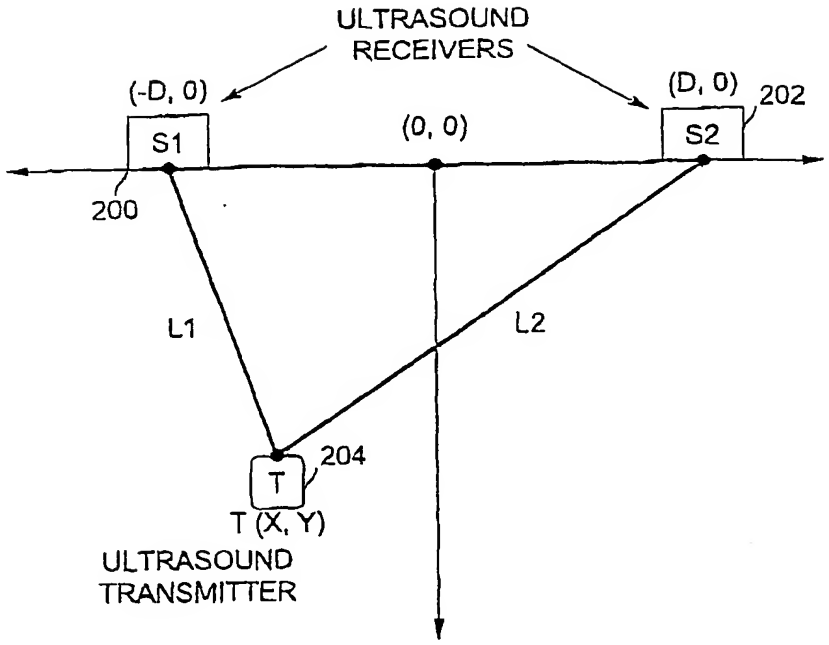
ULTRASOUND
RECEIVERS
(-D, 0)
(D, 0)
202
S1
(0, 0)
S2
200
L1
L2
204
T
T (X, Y)
ULTRASOUND
TRANSMITTER

Figure 2

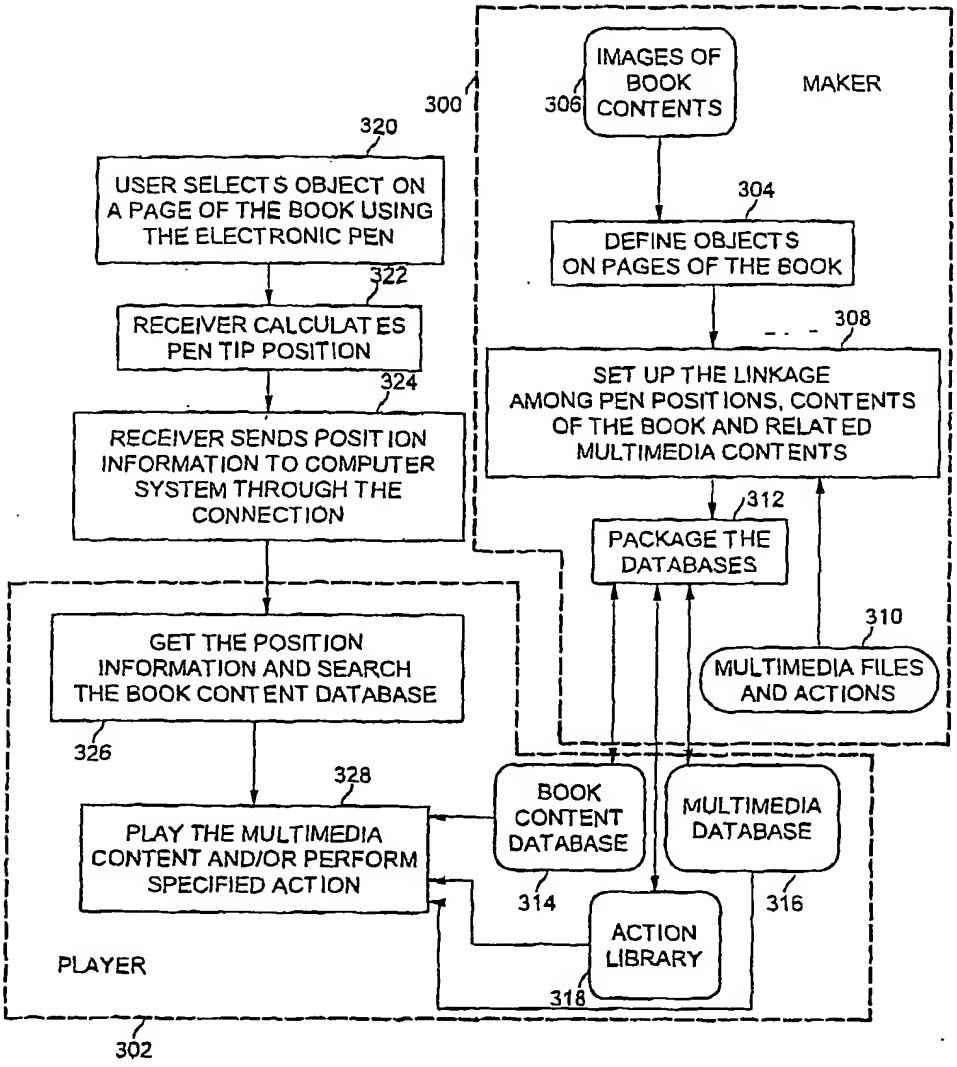
MAKER
300
IMAGES OF BOOK CONTENTS
306
DEFINE OBJECTS ON PAGES OF THE BOOK
304
SET UP THE LINKAGE AMONG PEN POSITIONS, CONTENTS OF THE BOOK AND RELATED MULTIMEDIA CONTENTS
308
PACKAGE THE DATABASES
312
MULTIMEDIA FILES AND ACTIONS
310
BOOK CONTENT DATABASE
314
MULTIMEDIA DATABASE
316
ACTION LIBRARY
318
320
USER SELECTS OBJECT ON A PAGE OF THE BOOK USING THE ELECTRONIC PEN
322
RECEIVER CALCULATES PEN TIP POSITION
324
RECEIVER SENDS POSITION INFORMATION TO COMPUTER SYSTEM THROUGH THE CONNECTION
GET THE POSITION INFORMATION AND SEARCH THE BOOK CONTENT DATABASE
326
328
PLAY THE MULTIMEDIA CONTENT AND/OR PERFORM SPECIFIED ACTION
PLAYER
302

Figure 3

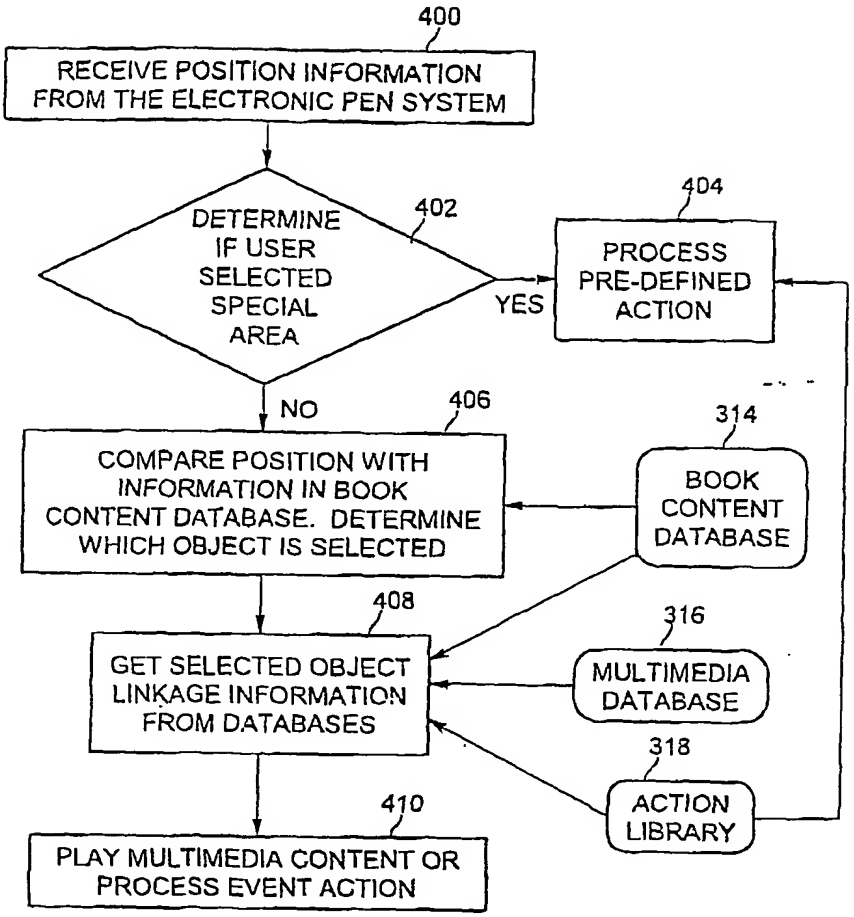
400
RECEIVE POSITION INFORMATION FROM THE ELECTRONIC PEN SYSTEM
DETERMINE IF USER SELECTED SPECIAL AREA
402
YES
404
PROCESS PRE-DEFINED ACTION
NO
406
COMPARE POSITION WITH INFORMATION IN BOOK CONTENT DATABASE. DETERMINE WHICH OBJECT IS SELECTED
314
BOOK CONTENT DATABASE
408
GET SELECTED OBJECT LINKAGE INFORMATION FROM DATABASES
316
MULTIMEDIA DATABASE
318
ACTION LIBRARY
410
PLAY MULTIMEDIA CONTENT OR PROCESS EVENT ACTION

Figure 4

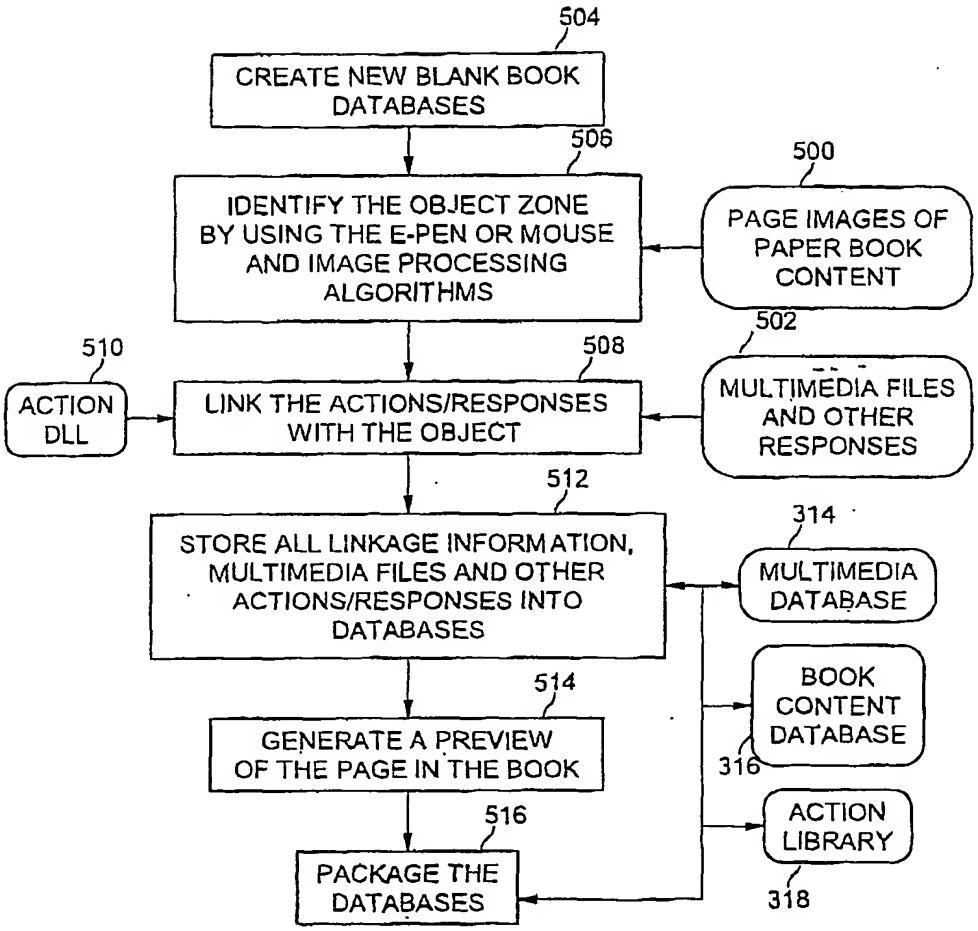
504
CREATE NEW BLANK BOOK DATABASES
506
IDENTIFY THE OBJECT ZONE BY USING THE E-PEN OR MOUSE AND IMAGE PROCESSING ALGORITHMS
500
PAGE IMAGES OF PAPER BOOK CONTENT
502
MULTIMEDIA FILES AND OTHER RESPONSES
510
ACTION DLL
508
LINK THE ACTIONS/RESPONSES WITH THE OBJECT
512
STORE ALL LINKAGE INFORMATION, MULTIMEDIA FILES AND OTHER ACTIONS/RESPONSES INTO DATABASES
314
MULTIMEDIA DATABASE
BOOK CONTENT DATABASE
316
514
GENERATE A PREVIEW OF THE PAGE IN THE BOOK
516
PACKAGE THE DATABASES
ACTION LIBRARY
318

Figure 5

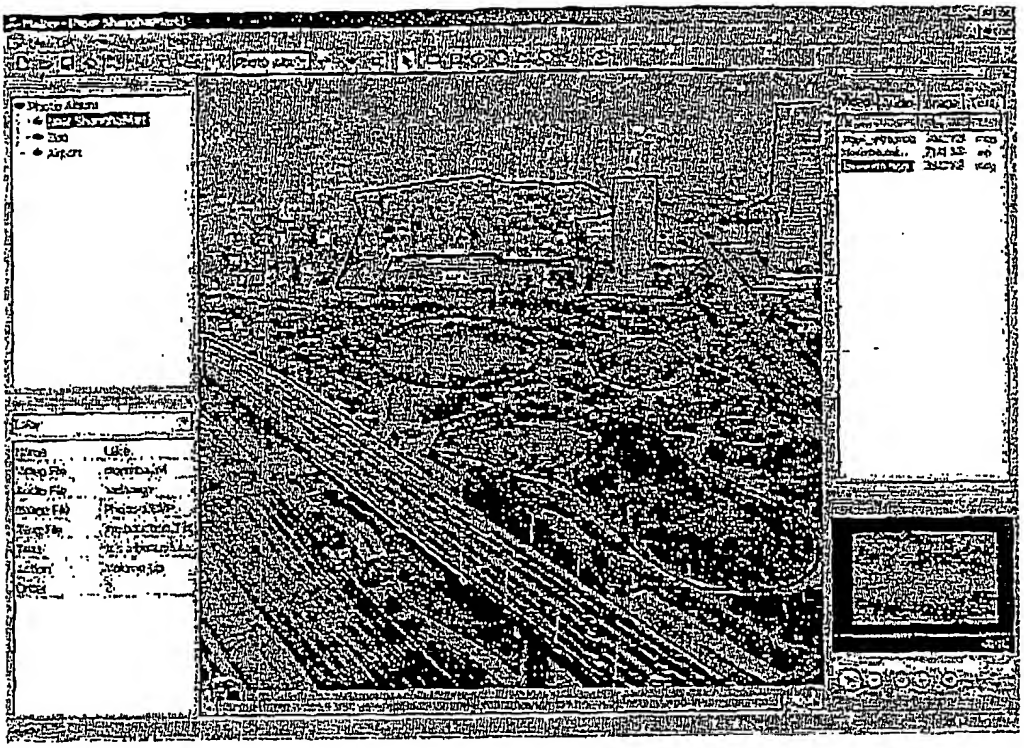

Figure 6

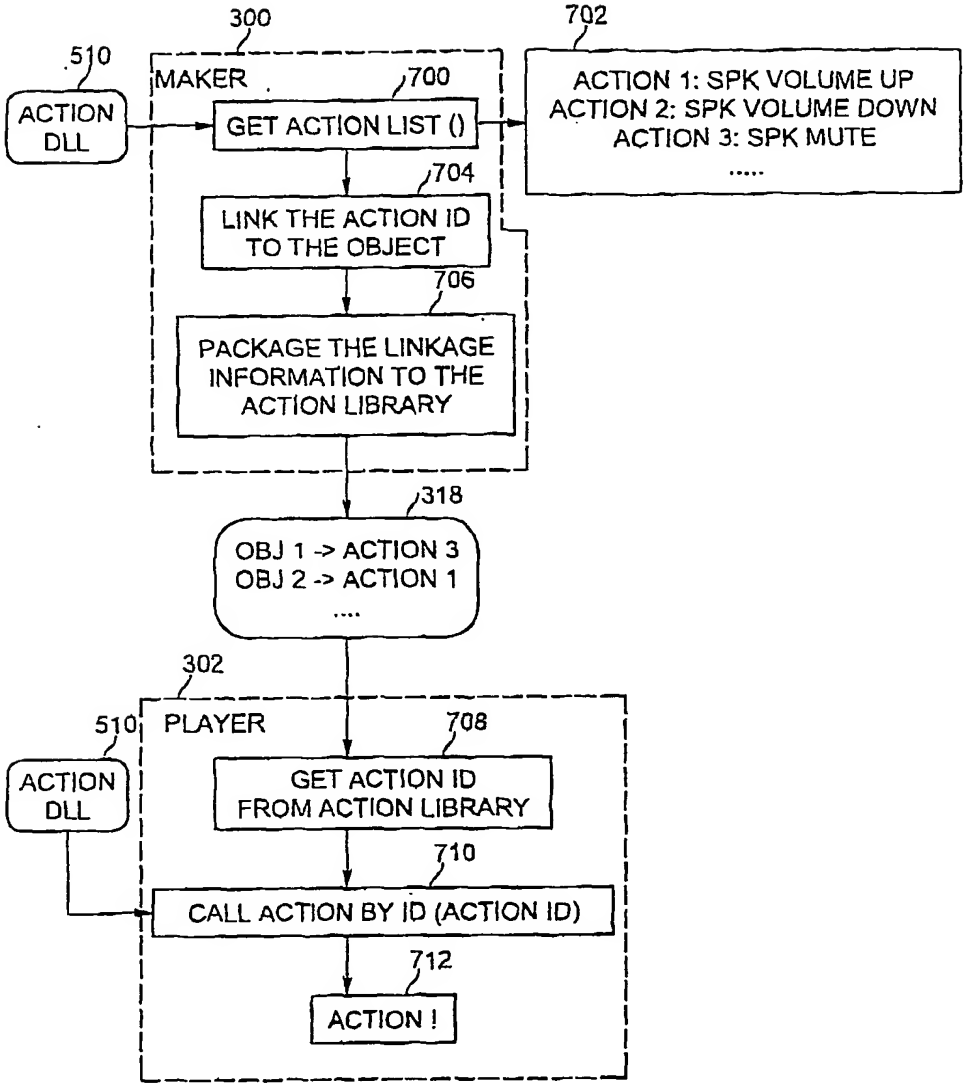
300
702
510
MAKER
700
ACTION DLL
GET ACTION LIST ()
ACTION 1: SPK VOLUME UP
ACTION 2: SPK VOLUME DOWN
ACTION 3: SPK MUTE
.....
704
LINK THE ACTION ID TO THE OBJECT
706
PACKAGE THE LINKAGE INFORMATION TO THE ACTION LIBRARY
318
OBJ 1 -> ACTION 3
OBJ 2 -> ACTION 1
....
302
510
PLAYER
708
ACTION DLL
GET ACTION ID FROM ACTION LIBRARY
710
CALL ACTION BY ID (ACTION ID)
712
ACTION !

Figure 7

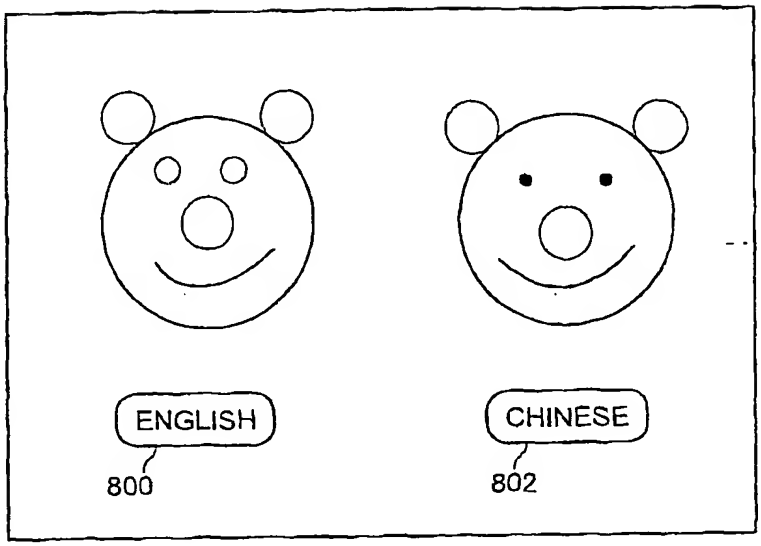

Figure 8

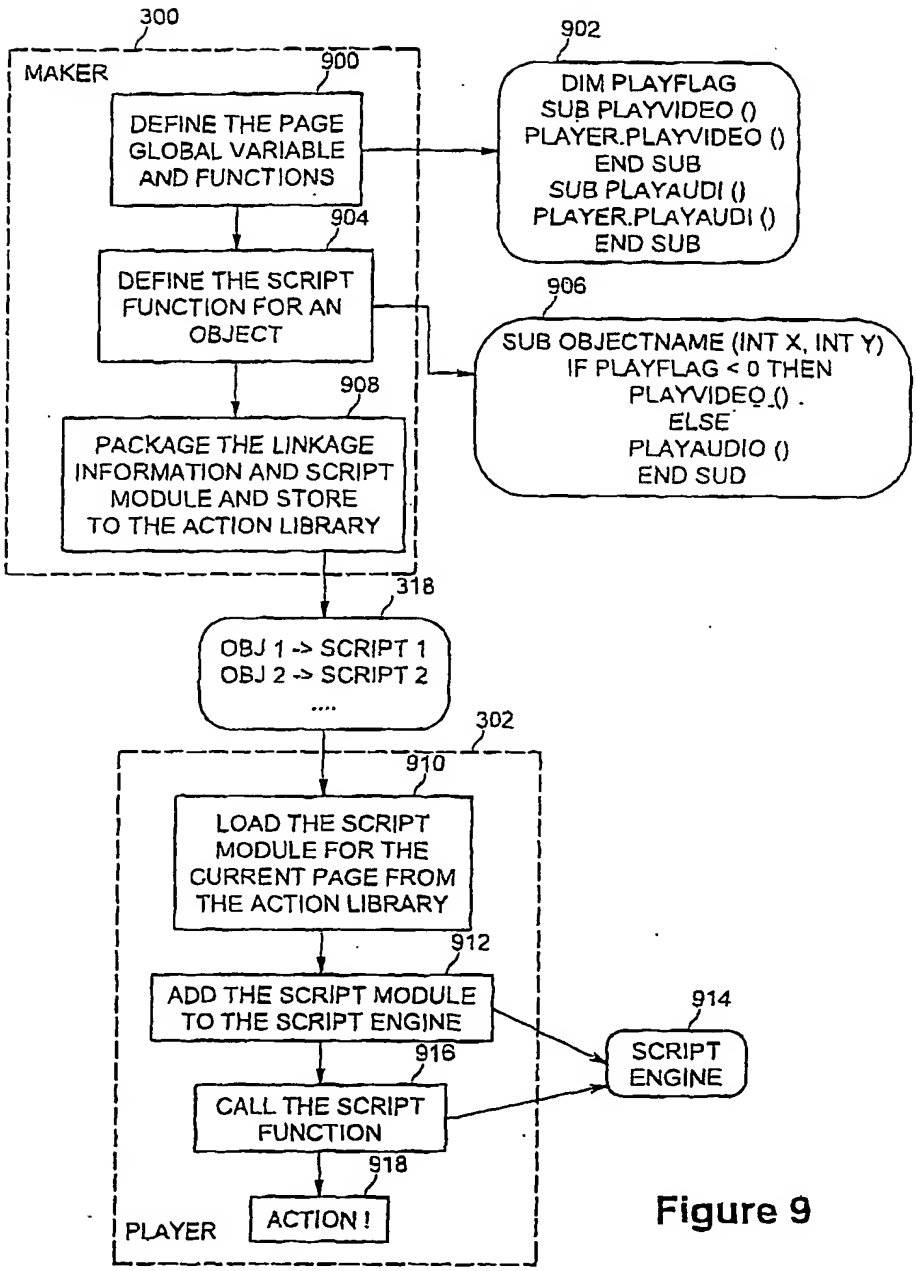
300
MAKER
900
DEFINE THE PAGE GLOBAL VARIABLE AND FUNCTIONS
902
DIM PLAYFLAG
SUB PLAYVIDEO ()
PLAYER.PLAYVIDEO ()
END SUB
SUB PLAYAUDI ()
PLAYER.PLAYAUDI ()
END SUB
904
DEFINE THE SCRIPT FUNCTION FOR AN OBJECT
906
SUB OBJECTNAME (INT X, INT Y)
IF PLAYFLAG < 0 THEN
PLAYVIDEO () .
ELSE
PLAYAUDIO ()
END SUD
908
PACKAGE THE LINKAGE INFORMATION AND SCRIPT MODULE AND STORE TO THE ACTION LIBRARY
318
OBJ 1 -> SCRIPT 1
OBJ 2 -> SCRIPT 2
....
302
910
LOAD THE SCRIPT MODULE FOR THE CURRENT PAGE FROM THE ACTION LIBRARY
912
ADD THE SCRIPT MODULE TO THE SCRIPT ENGINE
914
SCRIPT ENGINE
916
CALL THE SCRIPT FUNCTION
918
ACTION !
PLAYER

Figure 9